Shallow Water Management for Wildlife

Job Sheet

Natural Resources Conservation Service (NRCS)
Missouri Department of Conservation (MDC)
University of Missouri Extension – The School of Natural Resources

Landowner:	**Farm #:**
Field(s):	**Tract #:**
Date:	**County:**
Contact:	

WHAT IS SHALLOW WATER MANAGEMENT FOR WILDLIFE?

Managing shallow water on agricultural fields and moist soil areas can provide open water areas for waterfowl resting and feeding. Proper management can increase and maintain desirable foods for waterfowl and other species of wildlife.

Shallow water areas are typically flooded during the winter and then drained or dried during the spring or summer to promote the growth of desirable native food plants or to plant crops that will benefit wildlife. After the seed-producing plants have matured, and during the fall waterfowl migration, the area is allowed to flood with an average depth of 6 inches of water. The flooded food plants provide excellent resting and feeding areas for "puddle ducks" that "tip" to feed, like mallard, shoveler, pintail, and teal.

Canada geese will also feed in shallow water areas within their wintering range. In the spring, during a slow draw down, shallow water areas are especially beneficial for shorebirds, like plovers and sandpipers, on their northward migration.

VEGETATION MANAGEMENT

There are three basic ways to provide quality wildlife foods through vegetation management. They are 1) natural moist -soil plants, 2) planting a crop for wildlife and 3) managing crop residue. Advantages of moist soil management over planting crops are:

- Management costs are less;
- Attracts greater diversity of wildlife;
- Provides foods with greater nutrient value;
- Possible on marginal row crop sites;
- Production less influenced by weather;
- Propagates naturally occurring and preferred foods like smartweeds, sedges, and millets.

Advantages of planting crops are:

- Total energy production can be higher;
- Does not require as precise water control;
- Easier to control undesirable plant species;
- Certain crops (corn) are sought by late season migrating dabblers.

Each shallow water area may be managed using different methods in different years. In some cases,

altering the type of management can facilitate maintenance and increase productivity and diversity of the site.

Natural moist-soil plants. Wild millet, rice cutgrass, nutgrasses, smartweeds, beggarticks, etc., can be encouraged, through water level manipulations, to germinate from existing seed sources in the soil. They produce an abundant source of high quality food for waterfowl.

Drawdown (dewatering) of the area is necessary for moist- soil plant production. Slow drawdowns (two to three weeks) usually are more desirable for plant establishment and wildlife use. Early drawdowns (first 45 days of growing season) and midseason drawdowns (at least 90 days **before the end** of the

growing season) result in the greatest quantity of seeds produced.

Consider the species of seed that is likely to exist in the soil when determining the species of food plants you are going to manage. The species of seeds in the soil, the timing of the drawdown, as well as the type of drawdown, will determine plant species composition. In general, early slow drawdowns result in smartweeds and sedges, while midseason drawdowns produce millets and beggarticks.

The timing and extent of the drawdown should be varied from year to year to maintain productivity and a diverse plant community. See **Figure 1** for suggested annual flooding strategies.

Shorebirds, like plovers and sandpipers, feed on mud flats and very shallow water during an early to midseason drawdown. Therefore, managed shallow water areas can be a very important source of food for shorebirds during their spring migration.

Undesirable species that should be controlled include cocklebur, reed canarygrass, phragmites (common reed), maidencane, cattail, woody vegetation, and all noxious weeds including purple loosestrife. Most other plants that volunteer will be readily utilized by waterfowl.

If cocklebur volunteers, it can be controlled by a brief period of reflooding. Control other undesirable species, including tree seedlings by mowing and/or burning or disking during the growing season, then flooding until the following spring.

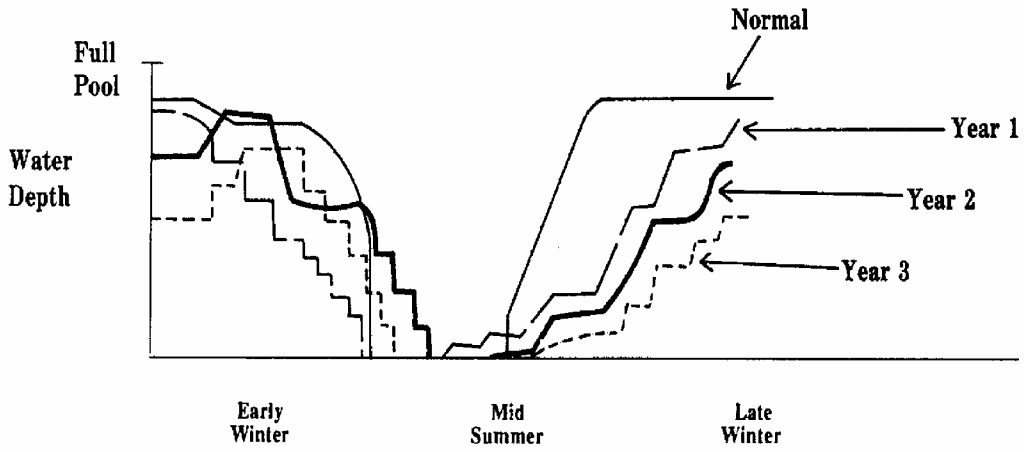
Annual species have the highest seed production. Therefore, to maintain the site in early successional species (mostly annuals), and to control unwanted species, it is best to dewater and disk the site every three years.

After the moist-soil plants have produced seed in late summer or fall, reflood the site slowly to coincide with the arrival of fall migrant waterfowl. Flooding the site slowly (two-three weeks) allows new areas of food to become available each day at the preferred water depth as the water is rising.

Planting waterfowl food plants. Draw down in late spring and plant species such as browntop millet, buckwheat, Japanese millet, grain sorghum, or corn. Fertilize for good production. Use of herbicides is generally not required since annual weeds produce useable wildlife food. After the crop has matured in late summer or fall, reflood the site slowly to coincide with the arrival of fall migrant waterfowl.

Crop residue. Utilize crop residue and waste grain after crops are harvested. Reflood the site slowly after harvest to coincide with the arrival of fall migrants.

FIGURE 1. Suggested Flooding Regimes for Seasonally Flooded Wetlands of the Midwest
***Fish and Wildlife Leaflet* 13.2.1 – 1988 - http://www.mesc.usgs.gov/wmh/Default.htm**



Rationale

Normal - Typical midsummer drawdown to establish moist-soil vegetation. Fall and winter flooding for waterfowl.

Year 1 - Gradual drawdown to optimize use by late spring migrants. Gradual reflooding for rails and waders.

Year 2 - Gradual drawdown lasting into midsummer to optimize use by late spring, migrant waterfowl, shorebirds, and waders. Gradual reflooding in fall to optimize use of seed resources.

Year 3 - Increasing water depths in spring to make food resources available. Gradual drawdown by late spring, followed by gradual reflooding in fall to shallow depths.

SHALLOW WATER MANAGEMENT FOR WILDLIFE DESIGN WORKSHEET

Farm: Field: Shallow Water Unit: Date:

Structural Components Required

Source of water: (Check if required and see engineering design for site)

_____ Water control structure on tile line, ditch, or dike.
_____ Diversion.
_____ Pond/reservoir
_____ Well with pump.
_____ Pump.
_____ Other source to be developed
_____ Surface water (Seasonal floods and/or surface runoff is usually sufficient)

Dikes required: (see engineering design for site)

Average height _____ Total length _____. Total cubic yards _____.

Seeding Required:

_____ Acres of seeding on dikes.

_____ Acres of seeding for buffer strips.

Management Recommendations (Schedule one of the following three management methods each year)

Moist-Soil Management

1. Slow drawdown starting on or about:

   1st year _____; 2nd year _____; 3rd year _____

Leave drained over summer for moist-soil plants to grow.

2. Allow shallow water area to gradually refill as waterfowl migrate through the area, start refilling on:

   1st year _____; 2nd year _____; 3rd year _____

Maintain shallow water over winter. Vary water depth from year to year.

3. Every three years disk at the start of the growing season. If undesirable plants become established, disk two or three times by mid summer then immediately flood (if possible) until the following spring.

Crops Planted For Waterfowl

Year	Planting Date	Crop	Rate	Fertilizer
	May-June	Corn/grain sorghum	(6-8 lbs/ac.)	80-100 lbs. N
	June - early July	Millets (Japanese, browntop)	(15 lbs/ac.)	30 lbs. N

- gradually flood to 1 - 18 inches as waterfowl migrate through the area in the fall.
- Leave flooded through the winter.

Crop Residue Managed For Waterfowl

In the following years conventional crops will be grown and harvested with the crop residue left for wildlife. After harvest, flood to an average of 6 inches, to coincide with the arrival of fall migrant waterfowl.

Year(s) _____ Crop(s) _____